

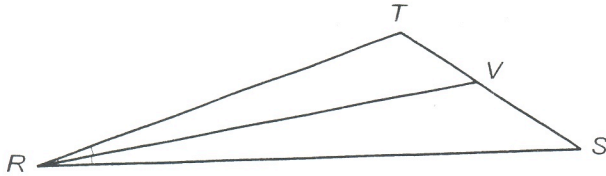
Study Guide

5.2 Blue

Angle Bisectors of Triangles

An **angle bisector** of a triangle is a segment that bisects an angle of the triangle and has one endpoint at the vertex of that angle and the other endpoint on the side opposite that vertex.

Example:



\overline{RV} is an angle bisector of $\triangle RST$.

In $\triangle ACE$, \overline{CF} , \overline{EB} , and \overline{AD} are angle bisectors.

1. $m\angle 3 =$ _____

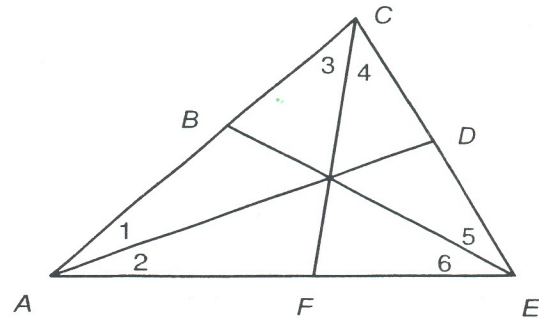
2. $m\angle 2 =$ _____

3. _____ bisects $\angle CAE$.

4. _____ bisects $\angle ACE$.

5. $m\angle 6 =$ _____ ($m\angle CEA$)

6. $m\angle ACE =$ _____ ($m\angle 3$)

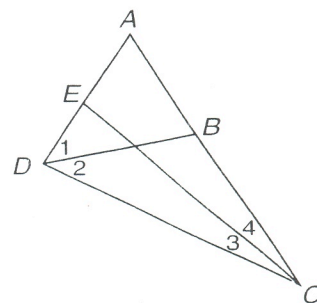


7. Draw and label a figure to illustrate this situation. \overline{HS} is an angle bisector of $\triangle GHI$, and S is between G and I.

Skills Practice 5, 2 Blue

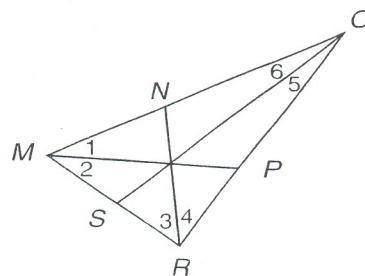
Angle Bisectors of Triangles

In $\triangle ACD$, \overline{DB} bisects $\angle ADC$, and \overline{CE} bisects $\angle ACD$.



1. If $m\angle 1 = 40$, what is $m\angle 2$?
2. Find $m\angle ACD$ if $m\angle 4 = 25$.
3. What is $m\angle 3$ if $m\angle ACD = 36$?
4. If $m\angle 1 = 45$, what is $m\angle ADC$?
5. What is $m\angle DCA$ if $m\angle DCE = 20$?
6. Find $m\angle ADB$ if $m\angle BDC = 39$.
7. What is $m\angle ACD$ if $m\angle 4 = 18$?
8. Find $m\angle 2$ if $m\angle 1 = 43$.
9. If $m\angle 3 = 21$, what is $m\angle 4$?
10. What is $m\angle ECD$ if $m\angle ECA = 24$?

In $\triangle MOR$, \overline{MP} bisects $\angle OMR$, \overline{RN} bisects $\angle MRO$, and \overline{OS} bisects $\angle MOR$.



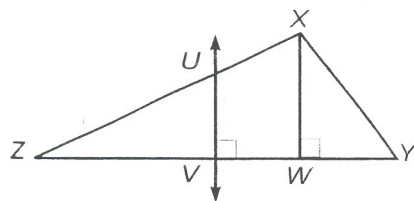
11. Find $m\angle 6$ if $m\angle MOR = 34$.
12. What is $m\angle OMR$ if $m\angle 1 = 23$?
13. If $m\angle 3 = 55$, what is $m\angle 4$?
14. What is $m\angle MOS$ if $m\angle MOR = 32$?
15. Find $m\angle 1$ if $m\angle 2 = 27$.
16. If $m\angle 4 = 60$, what is $m\angle MRO$?
17. What is $m\angle SOR$ if $m\angle 6 = 15$?
18. If $m\angle MRP = 112$, what is $m\angle 3$?
19. Find $m\angle OMP$ if $m\angle PMR = 30$.
20. What is $m\angle 4$ if $\angle MRO$ is a right angle?

Study Guide 511/513 Blue

Altitudes and Perpendicular Bisectors

An **altitude** of a triangle is a perpendicular segment that has one endpoint at a vertex of the triangle and the other endpoint on the side opposite that vertex. A **perpendicular bisector** of a side of a triangle is a segment or line that contains the midpoint of that side and is perpendicular to that side.

Example:

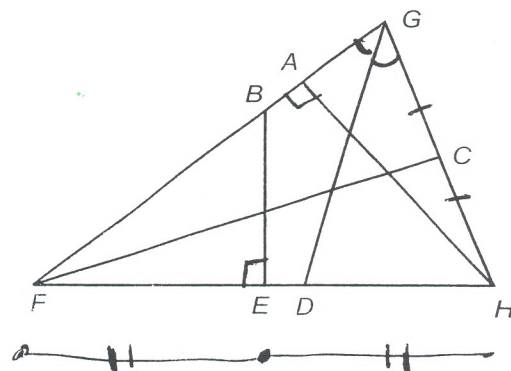


\overline{XW} is an altitude of $\triangle XYZ$.

\overline{UV} is a perpendicular bisector of $\triangle XYZ$.

In $\triangle FGH$, $\overline{GC} \cong \overline{CH}$, $\overline{FE} \cong \overline{EH}$, and $\angle FGD \cong \angle HGD$.

1. Which segment is a median of $\triangle FGH$?
2. Which segment is an altitude of $\triangle FGH$?
3. Which segment is a perpendicular bisector of $\triangle FGH$?



Draw and label a figure to illustrate each situation.

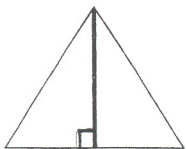
4. \overline{BV} is a median and a perpendicular bisector of $\triangle BST$.

5. \overline{KT} is an altitude of $\triangle KLM$, and L is between T and M .

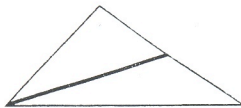
Skills Practice 5.1/5.3 Blue**Altitudes and Perpendicular Bisectors**

Tell whether the bold segment or line is an altitude, a perpendicular bisector, both, or neither.

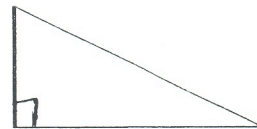
1.



2.



3.



4.



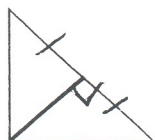
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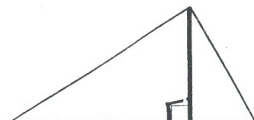
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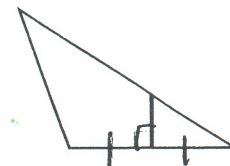
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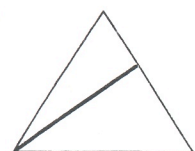
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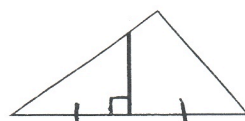
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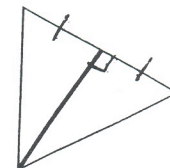
10.



11.



12.



Use the figure at the right.

13. Name a segment in the triangle that is an altitude.

14. Name a segment in the triangle that is a perpendicular bisector.

14. Name a segment in the triangle that is not an altitude and is not a perpendicular bisector.

